

AMENDMENT AND RESPONSE UNDER 37 CFR § 1.111
Serial Number: 09/726,629
Filing Date: November 30, 2000
Title: SOLDERLESS ELECTRONICS PACKAGING (as amended)
Assignee: Intel Corporation

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REMARKS

Applicants have carefully reviewed and considered the Office Action mailed on August 27, 2003, and the references cited therewith.

Claims 35-36, 39, 42-45, 48, 51-54, and 56-57 are amended. Claims 1-34, 40-41, and 49-50 are canceled. New claims 59-72 are added. As a result, claims 35-39, 42-48, and 51-72 are now pending in this application.

Amendments to the Title and Specification

The title has been amended to more accurately reflect the claimed subject matter.

In general, Applicants have made several amendments to the specification by referring to "inventive subject matter" or "embodiments of the invention" or "embodiments of the inventive subject matter" rather than "the invention" or "the present invention".

On page 1, line 6, Applicants have substituted the sub-title "Technical Field" for "Technical Field of the Invention".

On page 1, line 13, Applicants have substituted the sub-title "Background Information" for "Background of the Invention".

On page 5, line 5, Applicants have substituted the sub-title "Detailed Description" for "Detailed Description of Embodiments of the Invention".

In the paragraph beginning on page 5, line 7, the sentence "Such embodiments of the inventive subject matter may be referred to, individually and/or collectively, herein by the term "invention" merely for convenience and without intending to voluntarily limit the scope of this application to any single invention or inventive concept if more than one is in fact disclosed." has been inserted.

On page 10, line 17, the Examiner objected to the specification as containing an embedded hyperlink. Accordingly, this paragraph has been amended in accordance with MPEP §608.01 to avoid the URL information being executed as an embedded hyperlink.

The sub-title "Conclusion" has been deleted on page 21, line 1.

No new matter has been introduced through these amendments to the specification.

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Affirmation of Election

The Examiner required restriction to either the method or the apparatus claims. The Examiner further required Applicants to elect a single species for prosecution.

As provisionally elected by Applicants' representative, Walter W. Nielsen, on July 25, 2003, Applicants elect to prosecute the invention of Group II, Species I. Claims 35-58 are readable upon Species I. The non-elected claims 1-34 are hereby canceled. However, Applicants reserve the right to later file continuations or divisions having claims directed to the non-elected inventions and/or species.

Allowable Subject Matter and Amendments to the Claims

Claims 41-43 and 50-52 were objected to as being dependent upon a rejected base claim, but they were indicated to be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 35-36, 39, 42-45, 48, 51-54, and 56-57 have been amended. No new matter has been introduced.

Independent claim 35 has been amended to incorporate the subject matter previously recited in claims 40 and 41, and claims 40-41 have been canceled. Thus, claim 35 should be allowable, as should the claims dependent thereon.

Dependent claim 36 has been amended by deleting "connector comprises" and adding "are".

The dependency of claims 39, 42, and 43 has been changed, so that each of these claims depends from independent claim 35.

Independent claim 44 has been amended to incorporate the subject matter previously recited in claims 49 and 50, and claims 49-50 have been canceled. Thus, claim 44 should be allowable, as should the claims dependent thereon.

Dependent claim 45 has been amended by deleting "connector comprises" and adding "are".

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The dependency of claims 48, 51, and 52 has been changed, so that each of these claims depends from independent claim 44.

Independent claim 53 has been amended similarly to independent claim 35. In addition, the word "at" has been added in the preamble. Independent claim 53 should now be allowable, as should the claims dependent thereon.

Dependent claim 54 has been amended by deleting "connector comprises" and adding "are".

Independent claim 56 has been amended similarly to independent claim 35. In addition, the phrase "that includes" has been substituted for "comprising:". Independent claim 56 should now be allowable, as should the claims dependent thereon.

Dependent claim 57 has been amended by deleting "connector comprises" and adding "are".

Certain of the amendments to the claims are made to satisfy Applicants' preferences, not necessarily to satisfy any legal requirement(s) of the patent laws, and they are not intended to limit the scope of equivalents to which any claim element may be entitled.

New Claims 59-72

New claims 59-72 have been added to provide Applicants with additional protection to which Applicants are entitled. New claims 59-72 are supported by the original disclosure. No new matter has been introduced. Further, new claims 59-72 are readable upon the elected species.

Independent claim 59 is similar to independent claim 35. Claim 59 recites a plurality of wire wads rather than a plurality of elements formed of electrically conductive material. Claim 59 also does not contain a limitation that the flexible support is formed of plastic. Support may be found, for example, in original claim 40.

Dependent claims 60-63 are similar to dependent claims 36-39.

Dependent claim 64 recites that the insulating support is formed of material from the group consisting of a plastic, a resin, and a polymer. Support for "plastic" may be found, for example, in original claim 41; support for "resin" may be found, for example, on page 19, line 16

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of the original written description; support for "polymer" may be found, for example, on page 10, line 7 of the original written description.

Independent claim 65 is similar to independent claim 44. Claim 65 recites a plurality of wire wads rather than a plurality of elements formed of electrically conductive material. Claim 65 also does not contain a limitation that the flexible support is formed of plastic. Support may be found, for example, in original claim 40.

Dependent claims 66-67 are similar to dependent claims 45-46.

Dependent claim 68 recites that the insulating support is formed of material from the group consisting of a plastic, a resin, and a polymer. Support for may be found as indicated above regarding dependent claim 64.

Independent claim 69 is similar to independent claim 53. Claim 69 recites a plurality of wire wads rather than a plurality of elements formed of electrically conductive material. Claim 69 also does not contain a limitation that the flexible support is formed of plastic. Support may be found, for example, in original claim 40.

Dependent claims 70-71 are similar to dependent claims 54-55.

Dependent claim 72 recites that the insulating support is formed of material from the group consisting of a plastic, a resin, and a polymer. Support for may be found as indicated above regarding dependent claim 64.

Rejection of Claims 35-40, 44-49 and 53-55
under 35 U.S.C. §102(b)
as Anticipated by Scholz

Claims 35-40, 44-49 and 53-55 were rejected under 35 U.S.C. §102(b) as being anticipated by Scholz (U.S. 5,329,423).

Scholz discloses a compressive bump and socket interconnect between IC terminals and the terminals of a package substrate. A contact bump 24 (FIG. 1) of an IC chip 10 fits into a metal socket 38 within a compliant coating 36.

As mentioned above, independent claim 35 has been amended to incorporate the inventive subject matter of dependent claims 40 and 41, so claim 35 should be allowable over Scholz. Dependent claims 36-39 should also be allowable. Claim 40 has been canceled.

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Likewise, independent claim 44 has been amended to incorporate the inventive subject matter of dependent claims 49 and 50, so claim 44 should be allowable over Scholz. Dependent claims 45-48 should also be allowable. Claim 49 has been canceled.

Independent claim 53, as mentioned earlier, has been amended to include similar limitations to those incorporated into independent claims 35 and 44, so it should also be allowable. Dependent claims 54 and 55 should also be allowable.

Applicants respectfully request that the rejection of claims 35-40, 44-49 and 53-55 under 35 U.S.C. §102(b) as being anticipated by Scholz be withdrawn.

Rejection of Claims 35-36, 44-45 and 53-54
under 35 U.S.C. §102(b)
as Anticipated by Karnezos

Claims 35-36, 44-45 and 53-54 were rejected under 35 U.S.C. §102(b) as being anticipated by Karnezos (U.S. 4,813,129).

Karnezos discloses an interconnect structure for coupling two substrates, in which deformable conductive buttons 16 (FIG. 3) on one substrate deform against contact pads 28 on the other substrate.

As mentioned above, independent claims 35, 44, and 53 have all been amended to incorporate the limitations determined by the Examiner to be allowable over the art of record, so claims 35, 44, and 53, and respective dependent claims 36, 45, and 54 should all be allowable.

Applicants respectfully request that the rejection of claims 35-36, 44-45 and 53-54 under 35 U.S.C. §102(b) as being anticipated by Karnezos be withdrawn.

Rejection of Claims 56-58
under 35 U.S.C. §103(a) as Unpatentable
over Debenham in view of Scholz

Claims 56-58 were rejected under 35 U.S.C. §103(a) as being unpatentable over Debenham et al. (U.S. 6,365,421) in view of Scholz.

Debenham discloses a data processing system having a bus, display, external memory, and a processor (FIG. 1)

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Scholz was discussed earlier.

Independent claim 56 has been amended to incorporate the limitations determined by the Examiner to be allowable over the art of record, so claim 56 and its dependent claims 57-58 should all be allowable.

Applicants respectfully request that the rejection of claims 56-58 under 35 U.S.C. §103(b) as being unpatentable over Debenham in view of Scholz be withdrawn.

Allowability of New Claims 59-72

New dependent claim 59 has been added to provide Applicants with additional protection to which Applicants are entitled, and which is supported by the original disclosure.

New independent claims 59, 65, and 69 recite, inter alia, a compressible connector to couple a die to a substrate, wherein the connector comprises a flexible insulating support and a plurality of wire wads. Applicants could not find this structure in the art applied by the Examiner in the section 102 and 103 rejections. Therefore, independent claims 59, 65, and 69, and all claims dependent therefrom, should be allowable.

Additional Elements and Limitations

Applicants consider additional elements and limitations of claims 35-39, 42-48, and 51-72 to further distinguish over the cited references, and Applicants reserve the right to present arguments to this effect at a later date.

Documents Cited But Not Relied Upon For This Office Action

Applicants need not respond to the assertion of pertinence stated for the references cited but not relied upon by the Office Action, because these references are not made part of the rejections in this Office Action. Applicants are expressly not admitting to this assertion and reserve the right to address the assertion should it form part of future rejections.

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Conclusion

Applicants respectfully submit that claims 35-39, 42-48, and 51-72 are in condition for allowance, and notification to that effect is earnestly requested. Formal drawings have been prepared and are being submitted separately by mail, although Applicants note that no requirement for same was made yet by the Examiner. The Examiner is invited to telephone Applicants' attorney, Walter W. Nielsen (located in Phoenix, Arizona) at (602) 298-8920, or the below-signed attorney (located in Minneapolis, Minnesota) to facilitate prosecution of this application.

If necessary, please charge any additional fees or credit overpayment to Deposit Account No. 19-0743.

Respectfully submitted,

AJT V. SATHE ET AL.

By their Representatives,

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Date Sept. 29, 2003

By Ann M. McCrackin

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CERTIFICATE UNDER 37 CFR 1.8: The undersigned hereby certifies that this correspondence is being transmitted via facsimile to 703-746-7239 addressed to: Attn: Examiner Xuan M. Thai, Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450, on this 30 day of September, 2003.

KACIA LEE
Name

Kacia Lee
Signature